Menlo Park Notebook #168 [N-80-12-13]

This notebook covers the period December 1880-January 1881. The entries are by John W. Lawson and consist of notes and a few drawings relating to experiments on plating and chemically treating carbons. Sixteen loose pages found in this notebook were torn from another notebook and identified as "experiments tried." They appear to have been copied from a "Bk 2" and relate to the experiments recorded in Menlo Park Notebook #168. The book contains 283 numbered pages and has been used in both directions.

Blank pages not filmed: 1, 20-270.

Filming order: pp. 2-19; pp. 283-271 [in reverse page-number order].

~~Sept.~~ Dec, 13 —

Experiment of plating ~~at~~ the clamping points of carbon loops with copper — Gave satisfactory results — Orders to plate all the loops in the same manner.

S

~~Sept.~~ Dec 18

Experiment of plating with silver — Result exceedingly good, deposit clean and homogeneous —

" "

Tried iron, using ~~the~~ double sulphate of iron & ammonia — Bright, clean deposit. —

After boiling in solution and drying in oven, they are to be taken to Neal who will heat them in reg. way — after passing through furnace their resistance is to be tested and if lowered to any extent let them be boiled again in the Pt Chl. and again heated by Neal —

Dec. 29/80 —

Find I have been working with polarized batteries in plating the carbons for ~~the~~ lamps — Plating Ag & Cu.

1/4/81 — Platinized carbons — Placed the carbon loops in boiling solution Platinum chloride after they have been in solution 15 minutes They are to be taken out and ~~washed well in water for 15 minutes but~~ dried at a temperature of 75° C. — Then placed in lamp ~~and~~ treated in reg. way — J W Lawson

Platinized loops

Resistance of loops before being treated with platinum chlorides measur over 1000 Ohms – After treatment the loops measured respectively 1000. 590 and 350 Ohms. –

1/7/81 J.W.L.

4 carbons – 2 lamps of each

T.A.'s experiments –

No. 1 – 1 Millegramme napthaline crystals put in globe –

No. 3 – Piece of phosphorus, dried and size of birdshot, put in globe –

No. 4 – Piece of sodium size of birdshot put in globe –

No. 5 – 3 millegrammes crystals Trichloride carbon placed in globe

No. 6 – Platina wires and clamps coated heavily with shellac –

No. 7 – 3 Millegrammes Benzoic acid placed in globe –

1/11/81 —

Experiment No. 2

5 Milligrammes napthaline crystals dissolved in ½ Thimbelful gasoline — The inner surface of the lamp was then washed with this solution, the globe being heated before being washed. The lamp exhausted in reg. way —

No. 8^a The lamp before being placed on pump was washed inside with strong sulphuric acid —

No. 8^b. A piece of charcoal 3/16 in square was soaked in melted napthaline crystals then placed in lamp —
Lamp exhausted in reg. way

No-9 A piece of charcoal 3/16 in. square was heated until redhot and at red heat was plunged under the surface of mercury, removed and suspended in bottle containing strong ammonia but not in contact with the liquid after remaining in bottle 5 minutes. It was placed in lamp— pump exhausted in reg. way

1/13/81— No. 12— Soaked 2 carbonized loops 2 hours in an alcoholic solution of shellac about as thick as ~~that~~ used for lacquering— They were then allowed to drip and dry 1½ hours; given to Neal who placed in furnace and subjected to same treatment as "reg"

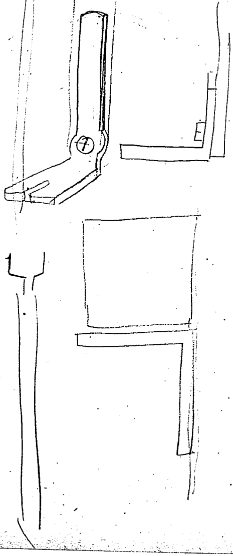
~~No. 12 1/[illegible]/81 — The resistance of the loops before treatment with shellac measured:—~~

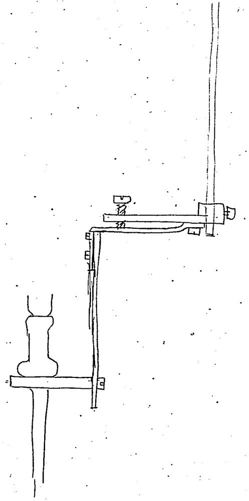
~~No. 1 — 215 Ohms — No. 2 — 221 Ohms~~

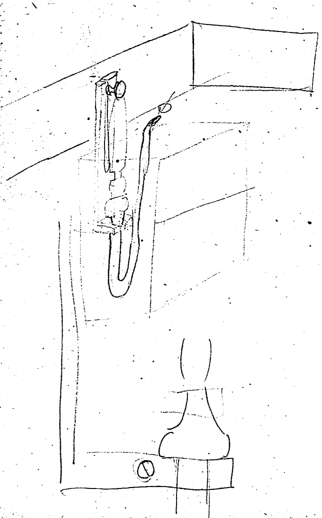
~~After treatment, they measured:—~~

~~No. 1 — 214 Ohms — No. 2 — 223 Ohms~~

~~The carbons not so black as before treatment with shellac varnish —~~







For Ag bath.

1 oz. Ag converted into ~~[illegible]~~
$Ag(CN)_2$

2 oz KCy dissolved in ~~[illegible]~~ " "9, ~~[illegible]~~ c.c. H_2O
1250 c.c. H_2O

2
8ª +
8ᵇ
8
9
6

When carbon is cold
the deposit (principal part)
is black

One of the clamps covered
with iridescent deposit
the other remaining bright
Film on glass disappearing

No. 6 – Shellac 1/11/81
When raised to high incandescence – ~~the~~ characteristic blue made its appearance at the clamp. a deposit being formed on the inner surface of the globe in ~~the~~ inner vicinity of the clamps (iridescent.) —

No. 8ᵇ – When first brought up to high incandescence no change from reg – appeared but after remaining so a few minutes an iridescent deposit made its appearance on the inner surface of the globe very faint

No. 8a — ~~Black~~ Iron grey deposit on clamps —

No. 5 — ~~Faint~~ becoming stronger iridescent deposit on glass in immediate vicinity of clamps —

No. 8a — A few minutes after being raised to high incandescence a dark iron grey deposit forms on the clamps —

No. 2 — Bursted — fused platina wires. try again

Experiments on clamps — Binding the platinum wire to the carbon by electro-deposits of copper

After exhausting

~~and bringing to high incan-~~
~~descence There was found~~
~~to be on one of the clamping~~
~~ends of the carbon just above~~
~~the clamps a fluffy substance~~
~~Not a deposit but apparently~~
~~produced from the decomposition~~
~~of some substance in the carbon~~
~~Probably the carbons absorbed~~
~~a quantity of salt having~~
~~remained in the solution~~
~~so long a time —~~

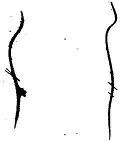
~~No. 2 = Blue around clamp~~
~~clamp around which blue~~
~~appears is blackened —~~

Nos- 8a Both broken at curve of carbon - the carbon being split into shreds

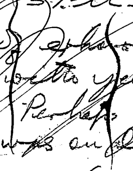
Ott -

1/12/81 — ~~[illegible]~~ 1.45 - P.M -

No 9 - Brought up to high incandescence - one clamp immediately coated with an iridescent film 1.50 P.M -
By raising still higher the film on clamp disappears and characteristic blue makes its appearance at clamp — which ~~film~~ ~~and~~ was coated with film —



~~1/12/81 — 3 PM —~~



~~Portion of [illegible] stem coated with yellowish film — Perhaps substance which was on clamp —~~

~~8th Mercury got into globe and of course the conditions of experiment were altered So Try this again —~~

[ITEM FOUND IN BOOK]

Experiments Tried.

[ITEM FOUND IN BOOK]

(1) 1/4/81 —

Bk. 2 : pg. 3

Platinized Carbons (High resistance loops)

Place the carbon loops in a boiling aqueous solution of platinum chloride, in which they are to remain 15 minutes, the solution being kept at the boiling point all the time — They are then to be taken out and dried at a temperature of 75° C.; then placed in lamp and treated in regular way; — or, after boiling in solution and drying in oven, they are to be taken to Neol who will subject them to same treatment that he does the regulars, after this boil again in platinum chloride and again heat in furnace; if, after each platinization the

[ITEM FOUND IN BOOK]

resistance of the carbons is lowered; continue the treatment until the resistance is as low as the regu.

[Bk-2: pg. 381.

1/7/81 —

A' carbons — 2 lamps of each —

(2) No-1 — 1 Millegramme napthaline crystals put in globe — [illegible] treated in regular way —

(3) No. 3 — Piece of phosphorus dried and size of bird shot put in globe — Treat in reg. way —

(4) No. 4 — Piece of sodium, dried, size of bird shot put in globe — Treat in reg. way

(5) No. 5 — 3 millegrammes crystals trichloride carbon placed in globe — Treat in reg. way —

[Bk-2: pg. 5

(6) No. 6 — Platina wires and clamps to be coated heavily with shellac — Treat in "reg." way —

[Bk-2: pg. 3

(7) No. 7 — 3 millegrammes benzoic acid placed in globe — Treat in "reg." way —

(8) 1/11/81 — No. 2 —

5 millegrammes napthaline crystals dissolved in ½ thimbleful gasolene — The inner surface of the globe to be washed with this solution, the globe being heated before washed — Treat in "reg." way —

[Bk. 2: pg. 588

[ITEM FOUND IN BOOK]

(9) No. 8a — The lamp before being placed on pump to be washed inside with strong sulphuric acid — Treat in "reg" way — [Bk. 2: lf. 4]

(10) No. 8b — A piece of charcoal 3/16 in. square to be soaked in napthaline crystals then placed in lamp — Treat in "reg" way — [Bk. 2: lf. 4]

(11) No. 9 — A piece of charcoal 3/16 in. square to be heated until redhot in flame of spirit lamp then plunged under the surface of mercury, removed and suspended in bottle containing strong aqua ammon but not in contact with the liquid, after remaining in bottle 5 minutes it is to be placed in lamp — Treat in "reg" way — [Bk. 2: lf. 6]

(12) 1/13/81 — No. 12 —

Soak two (2) carbonized loops 2 hours in an alcoholic solution of shellac about as thick as that used for lacquering — They are then allowed to drip and dry 1½ hours; given to Neal to place in furnace and subject to same treatment as "reg" (Bk. 2: lf. 7

[ITEM FOUND IN BOOK]

1/13/81–

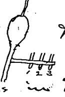
(13) Experiments on clamps
Binding the platinum wires to the carbons by means of electro deposits — Bk.2:pg7

1/15/81 —

(14) — No. 10 —
Clean the globe inside with wood naptha (pyroxylic spirit) and then exhaust — Bk.2:pg8

(15) No. 11 —
Place in the lamp 10 millegrammes of gum kingo

(16) No. 106 —
3 regular lamps with tube



Fill with phosphorus anhydride, tube No. 1,
fused, caustic potash " " 2,
with sulphur " " 3,
manipulate the carbons in "regl" way — Don't heat 1, 2 or 3 —

1/16/81—

(17) — Prepared a solution to try to deposit platinum by electro means — A solution of platinum bichloride was precipitated with ammonium chloride and the precipitate well washed with alcoholic water, then a small quantity of water added to it and a few pieces of caustic potassa thrown in, this was then added to a strong solution of potassium cyanide at a temperature of 100 C., the whole was then boiled until all ammoniacal fumes had stopped being given off from the solution Bk.2:pg9

[ITEM FOUND IN BOOK]

1/16/81

(18)- To the solution of (17)
was added some pieces of
solid platinum bichloride an
then heated until the precip
formed had disappeared —
Bk. 2: pg 9

(20) New style clamps — 1/15/81 —
Clamping by electro-deposition —

#1- A^s Placed in solution 3-P.M. 1/16/81
Taken out " 10-P.M. 1/17/81 —
Plated with copper —
In circuit of 1 Daniel's cell —

(20)

#2- A^s Placed in solution 11.30 A.M. 1/8/81
Taken out " 9. A.M. 1/10/81
With copper
1 Daniels —

#3- B^s (3) — Placed in solution 8- P.M. 1/16/81 —
Taken out " 1:30 P.M. 1/17/81 —
With copper,
1 Daniels

#4- Spiral (1)
Placed in solution 8. A.M. 1/18/81 —
Taken out " 9: A.M. 1/18/81 —
With copper
1 Daniels

#5- B^s (7) —
Placed in solution 2- P.M. 1/17/81 —
Taken out " 2 P.M. 1/18/81 —
With silver
1 Daniels

#6- B^s (4)
Placed in solution 5- P.M. 1/17/81 —
Taken out " 5 P.M. 1/18/81 —
With copper —
1 Daniels through 30 Ohms —

[ITEM FOUND IN BOOK]

(20)

#7. Spiral (1)
Placed in solution 9. A.M. 1/18/81-
Taken out " 9. A.M. 1/19/81-
With copper:
1 Dan's - 20 Ohms -

#9. Spiral (1)
Placed in solution 3: P.M. 1/18/81-
Taken out " 9: A.M. 1/19/81-
With copper
1 Dan's. 20 Ohms.

#10. B^s (4).
Placed in solution 9 P.M. 1/18/81
Taken out " 11. A.M. 1/19/81-
with copper
1 Dan's- 30 Ohms.

#8. B^s (6).
Placed in solution 2: P.M. 1/18/81.
Taken out " 11:30 A.M. 1/19/81-
With silver
1 Dan's 20 Ohms.

1/20/81

#11 Spiral (1)
Placed in solution 10. A.M. 1/19/81
Taken out " 2. P.M. 1/20/81-
1 Dan's. 20 Ohms. With copper

(20)

1/20/81-

#12- B^s (5)-
Placed in solution 3:30 P.M. 1/19/81
Taken out " 4- " 1/20/81-
With silver
1 Dan's- 20 Ohms-

#13- B^s (4)
Placed in solution 5:30 P.M. 1/19/81-
Taken out " 4:30 " 1/20/81.
With copper
1 Dan's- 30 Ohms.

#14- Spiral (1)-
Placed in solution 8 P.M. 1/19/81
Taken out " 10 A.M. 1/20/81-
Replaced in " " "
Taken out " 10 P.M. "
With copper
1 Dan's. 30 Ohms.
Bk.2, p.10-

1/22/81-

#15- 2 Spirals-
Placed in solution 3:30 P.M. 1/20/81
Taken out " 2:30 " 1/22/81
1 Dan's- 20 ohms. With copper

[ITEM FOUND IN BOOK]

(20)

#16 - 1 Spiral -
Placed in solution 9 P.M. 1/20/81
Taken out " 2:30 " 1/22/81 -
With copper
1 Dan's - 20 Ohms

1/24/81 -
#17 - ~~2~~ B^s
Placed in solution 10 P.M. 1/20/81 -
Taken out " 1 " 1/22/81 -
With silver
1 Dan's. 30 Ohms

1/25/81 -
#18 - 1 Spiral -
Placed in solution 4:30 P.M. 1/24/81 -
Taken out " 8:30 A.M. 1/25/81
With copper
1 Dan's - 20 Ohms.

#19. 4 A^s 1/26/81 -
Placed in solution 2: P.M. 1/25/81 -
Taken out " 8: A.M. 1/26/81 -
Cu
1 Dan's, 30 Ohms

(20) 1/27/81 -

#20. 4 A^s
Placed in solution 3: P.M. 1/26/81 -
Taken out " 8: A.M. 1/27/81 -
Cu
1 Dan's. 20 Ohms -

#21 - 1 Spiral -
Placed in solution 9 A.M. 1/27/81
Taken out " 4:30 P.M. 1/27/81
Cu
1 Dan's: 20 Ohms

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(27) 1/28/81 -

Order -
Make two lamps, regulators, ectr, but carbons coated with Alumina, Zirconia ect.

✓ No. 108 - Coate the carbon with Alumina -
✓ No. 110 - With Magnesia -
✓ " 111 - Strontia

[ITEM FOUND IN BOOK]

✓ No. 112 — With Silica —
" 113 " Zirconia
✓ " 114 " Cerium oxide

These oxides were taken and a [illegible] thick paste in ether made with each, then the entire carbon was coated with this paste, by means of a camel's hairbrus.